



IDAHO DEPARTMENT
OF HEALTH AND WELFARE

DIVISION OF
ENVIRONMENTAL QUALITY

Declaration of the Record of Decision

Site Name and Location

Ordnance Interim Action
Operable Unit 10-05
Waste Area Group 10
Idaho National Engineering Laboratory

Statement of Basis and Purpose

This decision document presents the selected alternative for interim remedial action of six identified ordnance locations at the Idaho National Engineering Laboratory (INEL), Operable Unit 10-05. This alternative was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the information in the administrative record for the site, which is indexed in Appendix C, and applicable guidance.

The lead agency for this decision is the U. S. Department of Energy (DOE). The U. S. Environmental Protection Agency (EPA) approves of this decision and, along with the State of Idaho Department of Health and Welfare (IDHW), has participated in the evaluation of interim action alternatives. The State of Idaho concurs with the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare, or the environment due to the presence of unexploded ordnance and ordnance compounds in the soil.

Description of the Selected Remedy

This Record of Decision addresses the cleanup of portions of the INEL contaminated with unexploded ordnance and explosives residues. Operable Unit 10-05 includes only those areas which have been identified for interim action in order to remove the immediate risks associated with unexploded ordnance. These areas are near facilities which are frequented by INEL site personnel and therefore pose an unacceptable risk which needs to be eliminated. The selected remedy addresses the significant potential risks associated with these sites: explosive hazards, and inhalation, ingestion, and dermal absorption of explosive residues.

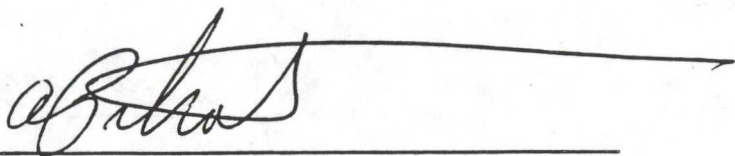
The major components of the selected remedy are:

- In-depth search of U. S. Navy and Department of Defense (DOD) historical records pertaining to activities at the Naval Proving Ground (NPG) and other suspected ordnance locations at the INEL;
- Search for unexploded ordnance using both visual and geophysical methods, followed by marking of locations;
- Controlled detonation of unexploded ordnance, confirmation of complete detonation, and disposal of nonhazardous solid waste;
- Soil sampling of detonation areas and other areas of suspected explosives contamination to determine areas requiring excavation;
- Removal and containerization of contaminated soils;
- Shipment of contaminated soils to an off-site incineration facility for treatment and disposal.

Declaration

The remedy selected for this interim action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements for the scope of this action, and is cost-effective. Although not intended to address fully the statutory mandate for permanence and treatment to the maximum extent practicable, the selected remedy does utilize treatment and thus is in furtherance of that mandate. This interim action may not constitute the final remedy for this operable unit, but the selected remedy does meet the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. The comprehensive Remedial Investigation/Feasibility Study (RI/FS) for Waste Area Group (WAG) 10, which encompasses the entire INEL site, will succeed this interim action. The WAG 10 RI/FS will evaluate the need for any additional action at the INEL, including the ordnance areas cleaned up under this interim action. Because this is an interim action Record of Decision, review of this operable unit and of this remedy will be ongoing as DOE, EPA, and the State of Idaho continue to develop final remedial requirements and alternatives for WAG 10.

Signature sheet for the foregoing Record of Decision for Operable Unit 10-05 interim action at the Idaho National Engineering Laboratory between the United States Department of Energy and the United States Environmental Protection Agency, with concurrence by the State of Idaho Department of Health and Welfare.

A handwritten signature in dark ink, appearing to read 'A. Pitrolo', is written over a horizontal line.

AUGUSTINE A. PITROLO

Manager

Department of Energy Field Office, Idaho

6-2-92

Date

Signature sheet for the foregoing Record of Decision for Operable Unit 10-05 interim action at the Idaho National Engineering Laboratory between the United States Department of Energy and the United States Environmental Protection Agency, with concurrence by the State of Idaho Department of Health and Welfare.

Dana A. Rasmussen

DANA RASMUSSEN

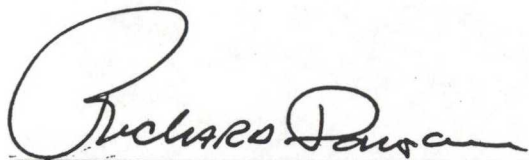
Regional Administrator, Region 10

Environmental Protection Agency

June 2, 1992

Date

Signature sheet for the foregoing Record of Decision for Operable Unit 10-05 interim action at the Idaho National Engineering Laboratory between the United States Department of Energy and the United States Environmental Protection Agency, with concurrence by the State of Idaho Department of Health and Welfare.

A handwritten signature in cursive script, appearing to read "Richard Donovan", is written over a horizontal line.

RICHARD DONOVAN

Director

Idaho Department of Health and Welfare

5-28-92

Date

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DECISION SUMMARY

1. SITE NAME, LOCATION, AND DESCRIPTION

The Idaho National Engineering Laboratory (INEL) is located 32 miles west of Idaho Falls, Idaho and occupies 890 square miles of the northeastern portion of the Eastern Snake River Plain. Within the INEL boundary is an area of approximately 270 square miles that was formerly known as the Naval Proving Ground (NPG) (Figure 1). The NPG was utilized primarily during the World War II era, prior to inception of the INEL in 1949.

Numerous unexploded ordnance devices have been discovered at the INEL by Site and subcontractor personnel. The ordnance are primarily a result of past activities associated with the former NPG. These activities included naval artillery testing, explosives storage bunker testing, and ordnance disposal. Unexploded ordnance have been found to be more concentrated in areas where these activities are known to have occurred. Ordnance found to date include: 3- to 16-inch artillery shells, partially exploded 125 to 2,000 pound bombs, anti-tank mines, depth charges, smokeless powder and dummy bombs with spotting charges.

Also, there are three suspected ordnance areas outside the NPG that have been identified at the INEL. The approximate locations of these areas are also shown in Figure 1. Two of these areas were used in the 1940s for aerial bombing practice by the U. S. Army Air Corps, flying out of Pocatello, Idaho. The third area was used at a later date by the U. S. Navy for naval artillery testing. The Navy fired artillery from a facility known as the Naval Ordnance Test Facility toward the north slope of the Big Southern Butte. At this time, the types of ordnance used at these sites, size of the areas potentially impacted, or targets used are not known.

Six ordnance areas within the NPG have been identified for cleanup for this interim action. These areas contain known types of unexploded ordnance and are near or in areas frequented by INEL personnel. Each of these locations is described in detail in Section 5.0. The approximate locations of the six ordnance locations are illustrated in Figure 1.

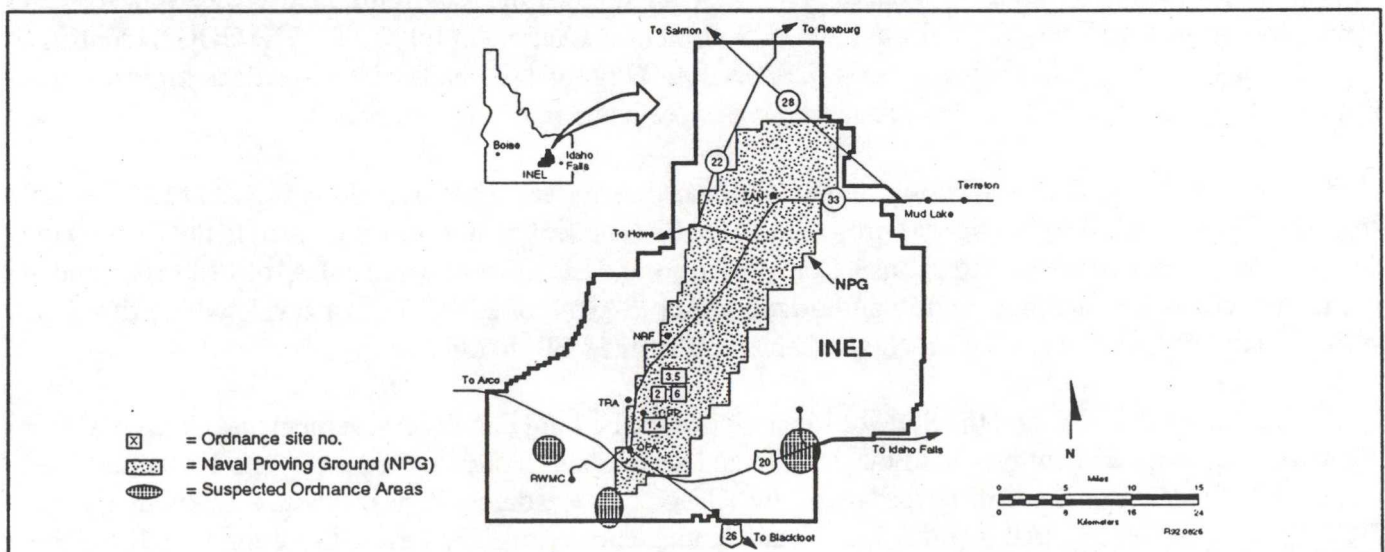


Figure 1. Location of the INEL, former Naval Proving Ground, and locations selected for interim action.

Current land use at the INEL is classified as industrial and mixed use by the Bureau of Land Management. The INEL has been designated as a National Environmental Research Park. The developed area within the INEL is surrounded by a 500 square mile buffer zone used for cattle and sheep grazing.

Approximately 11,700 people are employed at the INEL. The nearest major off-site population centers are in the cities of: Arco (22 miles west), Blackfoot (38 miles southeast), Idaho Falls (49 miles east), and Pocatello (67 miles southeast).

The INEL property is located on the northern edge of the Eastern Snake River Plain. This portion of the Eastern Snake River Plain contains a substantial volume of silicic and basaltic volcanic rocks with relatively minor amounts of sediment. Underlying the INEL are a series of basaltic lava flows interbedded with sediments. The basalt layer immediately beneath the INEL is relatively flat and covered with 20 to 30 feet of alluvium. The Snake River Plain Aquifer underlies the INEL and has been designated as a sole source aquifer pursuant to the Safe Drinking Water Act (SDWA).

The INEL has semidesert characteristics with hot summers and cold winters. Normal annual precipitation is 9.1 inches per year. Twenty distinctive vegetation cover types have been identified at the INEL, with big sagebrush the dominant species, covering approximately 80 percent of the area. The variety of available habitats on the INEL support numerous species of reptiles, birds, and mammals.

2. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Federal Government established the Nuclear Reactor Testing Station in 1949. The name was later changed to the INEL to better reflect the missions of the facility. Prior to 1949, approximately one third of the area now encompassed by the INEL was used by the U. S. Navy for testing naval artillery and other activities. This naval facility became known as the NPG. Other areas now within the INEL boundary were also used by the U.S. Army Air Corps for practice bombing at about the same time.

Two of the ordnance locations identified for cleanup by this interim action were first listed under the Consent Order and Compliance Agreement (COCA) signed by the Environmental Protection Agency (EPA), Department of Energy (DOE), and the U. S. Geological Survey in July 1987. The COCA identified two locations at the Central Facilities Area (CFA), CFA-09 (gravel pit) and CFA-11 (French drain), where ordnance were suspected. No other ordnance areas were listed in the agreement.

The INEL was proposed for listing on the National Priority List (NPL) on July 14, 1989 [54 Federal Register (FR) 29820]. The listing was proposed by the EPA under the authorities granted to the EPA by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The final rule which listed the INEL on the NPL was published on November 21, 1989 in 54 FR 44184.

In 1991, the EPA, DOE, and the State of Idaho signed the Federal Facility Agreement and Consent Order (FFA/CO). This agreement provided the process and schedule to facilitate cleanup of the areas identified in the FFA/CO Action Plan, in accordance with CERCLA, Resource Conservation and Recovery Act (RCRA), and the State of Idaho Hazardous Waste Management Act. The FFA/CO Action Plan lists three Operable Units (OUs) pertaining to ordnance areas: OU 4-01, OU 10-03, and OU 10-05. Operable Unit 4-

01, as indicated in the FFA/CO, is included in the OU 10-05 interim action.

This Record of Decision (ROD) documents the decision to perform an interim action on OU 10-05 and the remedy selected. The OU 10-05 interim action will be evaluated for adequacy as a final remedial action in the Waste Area Group (WAG) 10 Comprehensive Remedial Investigation/Feasibility Study (RI/FS), which is scheduled to begin in 1998 and is the final RI/FS scheduled for the INEL. In the interim, RI/FS investigations at the other WAGs will be completed according to the schedule in the FFA/CO Action Plan and lead to the final comprehensive RI/FS for WAG 10. By starting the interim action process now, cleanup activities on ordnance locations will begin much earlier than if following the RI/FS schedule in the FFA/CO Action Plan.

3. HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Notice of Availability for the Proposed Plan was published January 4 and 5, 1992 in the *Moscow-Pullman Daily News*, January 5, 1992 in *The Post Register* (Idaho Falls), *The Idaho State Journal* (Pocatello), *Twin Falls Times News*, *Idaho Statesman* (Boise), *The Lewiston Morning Tribune*, *South Idaho Press* (Burley), and January 6, 1992 in the *Idaho Press Tribune* (Nampa). A similar newspaper advertisement was published January 30, 1992 in *The Post Register* (Idaho Falls), *The Idaho State Journal* (Pocatello), *Twin Falls Times News*, *Idaho Statesman* (Boise), *Idaho Press Tribune* (Nampa), and the *South Idaho Press* (Burley) repeating the public meeting locations and times. Personal phone calls were made to inform key individuals and groups about the comment opportunity.

The public comment period was initially scheduled from January 13, 1992 to February 12, 1992. Three public meetings were held on February 4, 5, and 6, 1992 in Idaho Falls, Boise, and Burley, respectively. Representatives from the DOE, EPA, State of Idaho, and EG&G Idaho, Inc. were present at the public meetings to discuss the Proposed Plan, answer questions, and receive both written and oral official public comments. A court reporter was also present at each meeting to record verbatim the proceedings of the meetings. Copies of these records have been placed in each of the information repositories as part of the Administrative Record for public review.

A request for an extension of the public comment period was received and granted, therefore extending the comment period to March 13, 1992. A notice of the extension was published February 17 or 18, 1992 in *The Post Register*, *The Idaho State Journal*, *Twin Falls Times News*, *Idaho Statesman*, *The Lewiston Morning Tribune*, *Idaho Press Tribune*, *South Idaho Press*, and *Moscow-Pullman Daily News*.

All verbal comments, as given at the public meetings, and all written comments, as submitted, are repeated verbatim in the Administrative Record for the ROD. Those comments are annotated to indicate which response in the Responsiveness Summary (see Appendix A) addresses each comment. A response to the comments received during the public comment period is included in the Responsiveness Summary, which is part of this ROD. Public comments received on the Proposed Plan were considered during the development of this ROD. This decision document presents the selected remedial action for Operable Unit 10-05, chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Contingency Plan. The decision for this site is based on the information in the Administrative Record for this operable unit.

4. SCOPE AND ROLE OF OPERABLE UNIT

Under the FFA/CO the INEL is divided into ten WAGs. The WAGs are further divided into OUs. The ordnance areas have been assigned to WAG 10 since they are not associated with an identified facility. Operable Unit 10-05, which also includes OU 4-01, includes the six areas (see Section 5.0) which have been identified for this interim action. The intent of this interim action is to reduce the immediate risks associated with the six unexploded ordnance areas and expedite overall site cleanup. These six locations are in or near areas frequented by INEL site personnel and therefore pose a more immediate unacceptable risk to human health which needs to be reduced in the near-term. The principal risk in these areas is the threat of uncontrolled detonation of unexploded ordnance. Also, exposure to soil contaminated with ordnance compounds above the action levels presents a potential risk to site personnel in these areas since these compounds have been identified by the EPA as potential human carcinogens.

Another Operable Unit, OU 10-03, has been identified in the FFA/CO Action Plan for the remaining ordnance areas for which insufficient information exists to plan remediation at this time. In accordance with the FFA/CO Action Plan, these areas will be addressed in the Fall of 1995. The historical record search identified as part of the selected remedy documented by this ROD will provide much of this information and enable possible future actions for OU 10-03 to be planned.

The final remedies for both OU 10-03 and OU 10-05 will be addressed in the WAG 10 RI/FS scheduled to begin in 1998. In the interim, RI/FS investigations at the other WAGs will be completed according to the schedule in the FFA/CO Action Plan and lead to the final comprehensive RI/FS for WAG 10. This interim action is consistent with any planned final action.

5. SUMMARY OF SITE CHARACTERISTICS

Operable Unit 10-05 consists of the six locations identified for cleanup in this interim action. These six locations are in or near areas frequented by INEL personnel. INEL personnel working in these areas are exposed to the risks associated with uncontrolled detonation of unexploded ordnance and soils contaminated with explosives compounds. The pathways for human exposure to the soil contaminants include: ingestion, inhalation, and dermal absorption. A description of the six locations is presented below.

(1) CFA Gravel Pit. One 5-inch artillery shell is buried by a slumped gravel pit wall. This location is within 500 ft. of a site proposed for future development and 250 ft. from a road that would be upgraded for that future project.

(2) Storage Bunkers North of Idaho Chemical Processing Plant (ICPP). At least two explosives storage bunkers at this location were destroyed in U. S. Navy tests resulting in the dispersal of 5-inch artillery shells, anti-tank mines, etc. in this area. This site poses a hazard to personnel in the vicinity. The approximate area is 10 acres.

(3) National Oceanic and Atmospheric Association (NOAA) Grid. Numerous 5-inch artillery shells and chunks of explosives have been found at this location. The area is periodically used by NOAA personnel for atmospheric tests and is within 2 miles of Test Reactor Area (TRA) and ICPP, two important operating facilities. The approximate area of this location is 5 acres.

(4) CFA Building 633 Zone. This area was used as a firing station for support of naval artillery tests. Many types of ordnance have been removed from this area. One 5-inch artillery shell is located in a 25 ft deep French drain that has been backfilled with soil and concrete capped. The area is currently used by INEL personnel. Some of the nearby buildings are scheduled for demolition. This location is approximately 20 acres in size.

(5) Fire Station II Zone. Numerous anti-tank mines and other ordnance debris have been found in this area near INEL Fire Station II. These ordnance apparently were dispersed as a result of tests performed at nearby locations at the NPG. This location is approximately 10 acres in size and is used periodically for training of INEL fire fighting personnel.

(6) Power Line Road. The power line road is located approximately 2 miles east of ICPP and Fire Station II and is frequently used by INEL and off-site workers during maintenance of the power line. Numerous 5-inch artillery shells have been found from this area. Approximately 10 miles of this access road lies within the former Naval artillery range. Clearing unexploded ordnance from a corridor 50 feet wide on both sides of this access road would result in an area of about 118 acres.

Unexploded ordnance have been found on the ground surface in most of these areas during routine work activities. Ordnance found to date at the INEL include: 3- to 16-inch artillery shells, partially exploded 125 to 2,000 pound bombs, anti-tank mines, depth charges, smokeless powder, dummy bombs with spotting charges, and chunks of explosives compounds. It is estimated that 150 unexploded ordnance will be found and detonated during the implementation of this interim action.

In addition to unexploded ordnance in these locations, areas of soil are suspected of being contaminated with explosives compounds at the ground surface. Pieces of explosives compounds and discolored soil have been reported in these areas by INEL personnel. Also, controlled detonation of ordnance during this interim action may also release explosive contaminants to the soil. These contaminants potentially include picric acid, RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine), TNT (2,4,6-trinitrotoluene), and their numerous manufacturing contaminants and natural decomposition products. Contaminants, such as white phosphorus, metals and other military explosives, may also be present. The exact nature of the contaminants depends on the explosives used in the ordnance. TNT and RDX were the two most commonly used explosives during the World War II era.

Many of the ordnance compounds are considered to be potentially hazardous to human health. TNT and RDX are listed by the EPA as possible (group C) human carcinogens. The common TNT manufacturing contaminants, 2,4- and 2,6-dinitrotoluene (DNT), are listed as probable (group B2) human carcinogens by the EPA. Dinitrobenzene (DNB) and trinitrobenzene (TNB) are common products resulting from the natural breakdown of TNT. However, DNB and TNB are not listed by EPA as carcinogens. It is estimated that 185 cubic yards of soils contaminated with explosives would be remediated in this interim action.

6. SUMMARY OF SITE RISKS

Operable Unit 10-05 has been identified for interim action under the FFA/CO Action Plan for the INEL. This OU consists of six ordnance locations that have been identified for this interim action based on risks posed to site personnel, knowledge of the past activities that created the problem, and the hazards present. This interim action will provide the mechanism to actively search for and identify unexploded ordnance in these areas and remove the risks associated with the ordnance and soils contaminated with explosive compounds at these sites. A Baseline Risk Assessment has not been completed for OU 10-05 at this time, but will be included as part of the WAG 10 comprehensive RI/FS.

6.1 Explosive Risks

The main risk that has motivated this interim action is the potential explosive hazard associated with uncontrolled detonation of unexploded ordnance. Many of the known ordnance locations are in or near areas frequented by INEL personnel. Encounters with unexploded ordnance have occurred in the past and the potential remains for future encounters.

The CERCLA risk assessment methodology does not provide a mechanism to evaluate the risks posed by unexploded ordnance. Therefore, the risks associated with the six ordnance locations identified for this interim action were evaluated using the Department of Defense (DOD) Risk Assessment Code (RAC). The RAC methodology was developed for use at DOD sites where unexploded ordnance and contamination with ordnance compounds are a common problem. This methodology specifically addresses the risks associated with ordnance sites. The RAC was utilized for validation and confirmation of the unacceptable risks present at the six ordnance areas selected for this interim action.

The RAC method asks questions and assigns numerical values to the answers which are based on information available for the sites being evaluated. The result is a qualitative evaluation of the hazards present, the probability of those hazards resulting in an uncontrolled detonation, and recommendation for appropriate response. The results of the RAC evaluations performed on the six locations included in this interim action indicate that the hazards present warrant action to reduce the associated risks. This interim action will reduce those risks by finding and disposing of unexploded ordnance from the six areas identified for this interim action.

6.2 Contaminated Soil

Additional risks result from exposure to soils contaminated with explosive residues. Disposal and detonation of ordnance at the NPG have potentially released explosive residues to the adjacent soils. The detonation of unexploded ordnance for disposal, to be performed during this interim action, also has the potential to release contaminants to the soil.

No soil data exist to quantify concentrations of the contaminants of concern. For this reason, a risk analysis was performed using the risk assessment screening methodology currently used for FFA/CO investigations. This methodology provides a mechanism to derive acceptable levels of contaminants in soil or other media by back-calculation from the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) target risk range. The Track 1 methodology is reasonably conservative and uses humans as

sensitive indicators for the environment. It focuses on major environmental pathways, receptors, and exposure scenarios to identify risk-based soil criteria for contaminants of concern. Modifications to the methodology included the evaluation of dermal contact as an additional pathway of exposure and the derivation of toxicity data when appropriate data was not available. Dermal exposure has been evaluated and found to be an important pathway at other Superfund sites involving cleanup of ordnance compounds.

The objective of the risk analysis was to determine soil concentrations that represent an acceptable risk for the contaminants of concern. Risk-based soil concentrations were back-calculated from the established NCP target risk range of 1 in 10,000 (10^{-4}) to 1 in 1,000,000 (10^{-6}) for carcinogenic contaminants and a Hazard Index of one for non-carcinogenic contaminants. Because the purpose of such an analysis is to obtain risk-based soil concentrations, the Track 1 methodology does not require sampling data. Instead, the procedure uses risk criteria to establish acceptable contaminant concentrations in the media of concern.

The selection of exposure scenarios for the risk analysis was based on the current Track 1 methodology. This conservative methodology uses hypothetical exposure scenarios, both present (occupational) and future (residential). The hypothetical occupational scenario evaluated a worker at the site assumed to be exposed to the contaminants in the soil. The hypothetical residential scenario evaluated exposures to individuals assumed to reside at the site in the future. A future residential scenario was considered for this risk analysis because it is possible that a residence could be built on the site in the event the INEL is eventually closed and vacated.

The major pathways for human exposure to the explosives compounds are through dermal absorption, ingestion, and inhalation of contaminated materials. Each of these pathways was evaluated for the two exposure scenarios, occupational and residential. The occupational exposure scenario resulted in the limiting soil contaminant concentrations.

Concentrations of soil contaminants above the 1 in 10,000 (10^{-4}) risk-based soil levels as determined by the risk analysis are considered to pose an immediate risk, requiring cleanup. Therefore for this interim action, these concentrations have been selected as the screening action levels: TNT (440 mg/kg) and RDX (180 mg/kg). A screening action level for DNT has not been developed, since DNT is a manufacturing contaminant and natural breakdown product of TNT, normally making up approximately one percent by weight. The action level for TNT adequately provides for remediation of DNT and other natural breakdown products that may be present in the soil above the 1 in 10,000 (10^{-4}) level. This is consistent with the approach taken at other CERCLA sites with similar contaminants. The cleanup standards selected for this interim action are the 1 in 100,000 (10^{-5}) risk-based soil concentrations, 44 mg/kg for TNT and 18 mg/kg for RDX.

The action levels and cleanup standards selected for this interim action are protective against actual or expected exposures to the contaminants of concern. Based on the conservative nature of and the use of default values in the risk analysis, the 1 in 100,000 (10^{-5}) risk-based cleanup level is protective of human health and the environment. The calculated non-carcinogenic concentration for TNT (26 mg/kg) was not selected for the cleanup level because the risk evaluation had substantially lower confidence levels than that for the carcinogenic risk evaluation. The 1 in 100,000 (10^{-5}) risk-based cleanup concentration (44 mg/kg) selected for TNT is adequately protective of human health and the environment.

The action levels and cleanup standards selected for this action are appropriate for an interim action and are consistent with those selected at other Superfund sites contaminated with ordnance compounds. These levels will be re-evaluated as part of the WAG 10 comprehensive RI/FS to ensure that the cleanup remains protective considering cumulative effects.

This interim action will reduce the hazards associated with unexploded ordnance and soils contaminated with ordnance compounds at the six identified areas. Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment due to the presence of unexploded ordnance and ordnance compounds in the soil.

6.3 Ecological Concerns

Ecological concerns will be more fully addressed in the WAG 10 comprehensive RI/FS ROD. Since the Track 1 risk evaluation methodology is conservative and the major ecological exposure routes are expected to be the same as for human exposures, the risk reduction realized due to this interim action should also achieve a significant reduction in adverse ecological effects.

7. DESCRIPTION OF ALTERNATIVES

The Proposed Plan presented four interim action alternatives: (1) no action; (2) placement of administrative barriers; (3) detonation and disposal on-site; off-site incineration of contaminated soil; and (4) detonation and disposal on-site, on-site composting of contaminated soil. These four alternatives are discussed below in greater detail.

7.1 Alternative 1 - No Action

No remedial action would be implemented under the no action alternative. The no action alternative was evaluated as required by CERCLA and the NCP. No immediate reduction of the explosive risk or risks from explosive contamination would be accomplished. No significant costs would be associated with the no action alternative.

7.2 Alternative 2 - Placement of Administrative Barriers

This alternative would involve the placement of administrative controls, such as signs and fences, at all identified areas where unexploded ordnance have been found. Administrative barriers would not meet cleanup requirements but would limit human exposure by informing personnel of the hazards present in the identified areas. However, this alternative would provide no guarantee of reducing the risk of uncontrolled detonation to site personnel and would not reduce the potential risk to site personnel or the environment from the release of explosive residues. Estimated total cost would be \$182,600.

7.3 Alternative 3 - Detonation and Disposal On-site, Off-site Incineration of Contaminated Soil

This alternative involves a phased approach leading to controlled on-site detonation of unexploded ordnance by experienced personnel, followed by incineration of soils contaminated with explosive residues.

Phase I would first proceed with an in-depth record search of NPG and INEL historical records. This would include searching DOD record storage facilities located outside of the INEL and would encompass all identified and suspected ordnance areas at the INEL. The record search would provide the necessary background information to identify ordnance-related activities, target areas, and existing hazards in order to prepare plans, procedures and health and safety documentation to implement the cleanup. Additional ordnance areas identified through the record search which the FFA/CO Remedial Project Managers agree will pose an immediate unacceptable risk to site personnel or the public, and consist of limited additional magnitude and associated hazards, will be considered within the scope of this interim action. Ordnance areas evaluated during the record search, which are deemed to pose an immediate unacceptable risk and fall outside the current scope of this interim action could be addressed by amending the ROD for this interim action. Upon concurrence of the three FFA/CO Project Managers, a ROD amendment may be initiated and would involve another public comment period.

As part of this interim action, areas identified which are crossed by public roads will be posted with signs to warn of the potential hazards to the public presented by unexploded ordnance. Phase II would continue with a systematic search for surface and near-surface ordnance at the identified ordnance areas using visual and geophysical search methods. Unexploded ordnance and chunks of explosive discovered in this manner would be marked, identified, and investigated to determine ordnance types and whether explosives were contained within. These ordnance would then be detonated in place or, if necessary, moved to a safer location for detonation with other like devices by qualified explosive ordnance disposal technicians. The areas would then be policed for shrapnel and examined to insure complete detonation of explosive materials. Any pieces of explosive residue released due to incomplete detonation would be detonated again. Nonhazardous solid waste, such as shrapnel, resulting from detonation would be disposed in the INEL RCRA Subtitle D landfill at CFA and, to the extent possible, scrap metal would be recycled.

Phase III would involve systematic sampling of soils in areas where detonations occurred and areas suspected to be contaminated from past activities due to visible discoloration. Samples would be analyzed using field methods developed for explosives by the DOD with 10 percent of the samples sent to an off-site analytical laboratory for quality assurance and confirmation of results. These data would be used to determine the volume of soil to be removed based on the cleanup action levels and standards presented in this ROD.

Phase IV would involve removal of soil contaminated with explosives above the action levels. Contaminated soils would first be sampled and analyzed using toxicity characteristic leaching procedure (TCLP) methodology to determine if RCRA requirements apply, and then taken to an off-site treatment/disposal facility for incineration and disposal. The \$2,359,500 estimated total cost for this alternative assumes 185 cubic yards of soil will require treatment.

7.4 Alternative 4 - Detonation and Disposal On-site, On-site Composting of Contaminated Soil

Alternative 4 involves the same phased approach as in alternative 3. The NPG record search, posting of signs, ordnance area search, detonation, and soil sampling (Phases I, II and III) would be the same for this alternative. However, remediation of soil contaminated with explosive residues (Phase IV) would utilize the innovative composting technology currently being evaluated by the DOD and EPA for cleanup of soils contaminated with explosives at the Umatilla Army Depot Activity Superfund site in Oregon.

In this alternative, contaminated soil would be removed and mixed with nutrient-rich organic material (manure, etc.) and placed inside a containment structure where temperature and moisture could be controlled. This methodology utilizes native soil microorganisms, similar to municipal waste composting, to degrade contaminants and has been shown to successfully remediate mixed explosives in soil within 90 days. Treated soil would be sampled and analyzed for explosives to confirm successful remediation. Successfully treated soil would then be used for clean fill at the INEL.

The capabilities of INEL soil and associated native microorganisms to biodegrade ordnance compounds would first have to be evaluated in a pilot-scale test. If this methodology is not proven to be feasible, alternative 3 would be selected as a contingency. Total cost estimated for this alternative is \$2,075,500.

8. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The CERCLA guidance requires that each remedial alternative be evaluated according to specific criteria. The purpose of the evaluation is to determine the advantages and disadvantages of each alternative, and thereby guide selection of the remedial alternative offering the most effective and feasible means of achieving the stated cleanup objectives. While all nine CERCLA criteria are important, they are weighted differently in the decision making process depending on whether they describe a required level of performance (threshold criteria), technical advantages and disadvantages (balancing criteria), or review and evaluation by other entities (modifying criteria). The four remedial alternatives described in Section 7.0 were evaluated according to the following CERCLA criteria:

- Threshold criteria
 - Overall protection of human health and the environment
 - Compliance with ARARs
- Balancing criteria
 - Long-term effectiveness and permanence
 - Reduction of toxicity, mobility, or volume through treatment
 - Short-term effectiveness
 - Implementability
 - Cost
- Modifying criteria
 - State acceptance
 - Community acceptance

8.1 Threshold Criteria

The remedial alternatives were evaluated in relation to the threshold criteria: overall protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs). The threshold criteria must be met by the remedial alternatives for further consideration as potential final remedies for the ROD. It is the intent of this interim action to meet the threshold criteria. The effectiveness of this remedial action as a final remedy will be evaluated in the WAG 10 comprehensive RI/FS.

8.1.1 Overall Protection of Human Health and the Environment

The primary risks to be reduced are the safety hazard to INEL personnel due to the presence of unexploded ordnance and risk of ingestion, inhalation, or dermal contact with explosive residues present on-site. Alternatives 3 and 4 would remove the hazards associated with the unexploded ordnance and soil contaminated with explosive residues above the action levels, providing protection for human health and the environment. Alternative 2 could potentially reduce exposure to these risks but would not be as effective as alternatives 3 and 4 since the hazards remain in place. Alternative 1 would do nothing to reduce these risks.

8.1.2 Compliance with ARARs

CERCLA, as amended by SARA, requires that remedial actions for Superfund sites comply with Federal and State laws applicable to the action being taken. Remedial actions should also comply with the requirements of laws and regulations that are not directly applicable, but are relevant and appropriate. Combined, these are referred to as ARARs. Compliance with ARARs requires evaluation of the remedial alternatives for compliance with chemical-, location-, and action-specific ARARs or justification of a waiver; and whether the remedial alternatives consider other criteria, advisories, and guidelines.

8.1.2.1 Chemical-specific ARARs - Chemical-specific ARARs are standards for allowable levels of certain contaminants in the environment. Such standards are generally issued pursuant to the Federal SDWA, Clean Water Act, Clean Air Act, RCRA, Atomic Energy Act, and State counterpart requirements.

There are no chemical-specific ARARs governing clean-up levels for unexploded ordnance or explosive residues in soil. Therefore, based on knowledge to date, no chemical-specific ARARs have been identified. If chemical-specific ARARs are identified as the development of Remedial Design/Remedial Action progresses, they will be complied with.

Federal and State water quality regulations are not applicable because the interim action does not deal with surface water or groundwater contamination. Water quality issues will be addressed in the WAG 10 site-wide, comprehensive RI/FS.

Unexploded ordnance are not classified as hazardous waste as described in RCRA. Explosives residues are classified as listed RCRA hazardous wastes if they are generated by a manufacturing or processing facility or may be characteristic RCRA hazardous wastes if they are reactive. The concentrations of explosives in the contaminated soils are expected to be far below the 12 percent by weight cutoff that would make them reactive, based on research performed by DOD. However, any contaminated soils taken off-site

for treatment/disposal would need to be sampled and analyzed using the RCRA TCLP methodology to determine waste handling and shipping requirements.

8.1.2.2 Action-specific ARARs - An air quality permit is not required for this interim action since it is a CERCLA onsite action. However, the substantive requirements of an air quality permit must be met. The Idaho Division of Environmental Quality will be informed of this action and provided with the appropriate information for their review prior to taking any action.

8.1.2.3 Location-specific ARARs - The National Historic Preservation Act is applicable to CERCLA actions. However, this interim action is not expected to impact areas with historic significance. Five of the six locations have been previously surveyed for cultural resources and the sixth location will be surveyed prior to the start of any actions. Also, no threatened or endangered species or habitats have been identified in these areas so the Endangered Species Act is not considered to be an ARAR for this interim action.

8.2 Balancing Criteria

Once a remedial alternative has been shown to satisfy the threshold criteria, five balancing criteria are used to evaluate other aspects of the potential alternatives. The balancing criteria are used in refining the selection of candidate alternatives for the proposed action. The five balancing criteria are: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. Each criterion is further explained in the following sections.

The no action alternative was eliminated from further evaluation since it did not meet the threshold criteria described above. The remaining three alternatives are evaluated below against each of the five balancing criteria.

8.2.1 Long-term Effectiveness and Permanence

Alternatives 3 and 4 would provide long-term effectiveness and permanence by removing the potential explosive hazards and soil contaminated with explosive residues above the cleanup action levels. Alternative 2, placement of administrative barriers, provides some reduction of risk but its effectiveness and permanence would be limited. The hazards would remain in place and some personnel must enter these areas to perform their work in support of the continued operations of the INEL.

8.2.2 Reduction of Toxicity, Mobility, or Volume Through Treatment

This criterion addresses the statutory preference for selecting remedial actions employing treatment technologies that permanently reduce toxicity, mobility, or volume of the hazardous substances as their principal element. Evaluation of alternatives based on this criterion requires analysis of the following factors: treatment process used; toxicity and nature of the material treated; amount of hazardous material destroyed or treated; irreversibility of the treatment; type and quantity of treatment byproducts; and the statutory preference for treatment as a principal element.

Alternative 3 would remove the risk posed by unexploded ordnance through controlled detonation. Under this alternative, contaminated soils with concentrations of contaminants above the cleanup action level

would be incinerated off-site. The incineration process is irreversible, destroying the ordnance compounds, and producing a smaller volume of ash. The incinerator chosen for this action will be a facility approved by the EPA to receive CERCLA wastes and will be responsible for proper disposal of the ash depending on the nature of any residual contamination present. This alternative offers the greatest reduction of toxicity, mobility, or volume of wastes present at the ordnance locations identified in this interim action.

Alternative 4 would also remove the risk posed by unexploded ordnance through controlled detonation. Alternative 4 differs from alternative 3 in that soils contaminated with ordnance compounds above the cleanup action levels would be treated by composting on-site. This alternative would also potentially reduce toxicity, mobility or volume of wastes by degrading the ordnance compounds present in the soil. However, if other contaminants, such as heavy metals, are present, the treatment process could be compromised resulting in an increase in the residual waste volume, which could potentially require disposal at an off-site EPA approved facility. No soil sampling data exists to fully evaluate the nature of the soil contaminants.

Alternative 2, placement of administrative barriers, would provide no treatment and, therefore, would not fulfill the statutory preference for remedial actions involving treatment. The hazards associated with unexploded ordnance and contaminated soils would remain in place. No reduction of toxicity, mobility, or volume through treatment would be accomplished.

8.2.3 Short-term Effectiveness

The evaluation of alternatives based on short-term effectiveness requires an analysis of the effectiveness of protection for the community and workers during remedial actions, environmental impacts during implementation, and the amount of time required for remedial action objectives to be achieved.

Alternative 3 could be implemented relatively quickly using available technology. Additionally, this technology has been demonstrated in the past at the INEL and DOD facilities. Detonation of unexploded ordnance would remove the immediate safety hazard to INEL workers. Removal of contaminated soil would further reduce risks and cause minimal impacts to the environment. Remedial action objectives would be achieved within two years. Dust and noise would be produced by this alternative but these impacts would be mitigated through remedial design to minimize impacts to INEL workers and the environment. Remedial activities would protect workers by meeting the requirements of the Occupational Safety and Health Act (OSHA). Disturbed areas would be backfilled with clean fill as necessary and reseeded to match natural vegetation. No impact to the community is expected from this action.

Alternative 4 would require some lead time to design and perform a pilot-scale study before implementation. After this study demonstrated feasibility of the treatment, this alternative would be implemented. Remedial objectives could be achieved within two years. Alternative 4 could effectively remove the hazard of unexploded ordnance and risks associated with explosive residues in soil. Potential impacts to workers and the environment from detonation of ordnance and excavation of contaminated soils would be similar to those identified for alternative 3.

Alternative 2 could be completed quickly using existing resources. No significant impacts to the environment would be associated with this alternative. However, this alternative would not eliminate risks associated with the ordnance sites, and therefore not meet the remedial action objectives.

8.2.4 Implementability

The implementability criterion has three factors that must be evaluated: technical feasibility; administrative feasibility; and the availability of services and materials. Technical feasibility requires evaluation of the ability to construct and operate the technology, the reliability of the technology, the ease of undertaking additional remedial action (if necessary), and monitoring considerations. The ability to coordinate actions with other agencies is the only factor for evaluating administrative feasibility. This would include the substantive requirements of a State of Idaho air quality permit and any requirements for off-site disposal. The availability of services and materials requires evaluation of the following factors: availability of treatment, storage and disposal services; availability of necessary equipment and specialists; and availability of prospective technologies.

Detonation and incineration, alternative 3, has previously been implemented at many DOD facilities. However, these facilities brought an incinerator on-site for treatment of contaminated soil. Due to the low volume of contaminated materials expected, this action cannot justify the significant initial capital costs of bringing an incinerator to the INEL. Therefore, an off-site incinerator approved by the EPA to receive CERCLA wastes would be utilized. This alternative could be readily implemented using existing technologies.

Alternative 4 would require design and completion of a pilot-scale study prior to construction and implementation of Phase IV. Soils and contaminants specific to the INEL would be evaluated to insure success of the composting technology. However, this alternative is not readily implementable due to the unknown nature of the soil contaminants and the estimated small quantity requiring treatment. The presence of heavy metals, in particular, would make the composting technology infeasible.

Alternative 2, placement of administrative barriers, could be readily implemented following procurement of materials, minimal personnel training and planning. The time required to fabricate the signs and install signs and fences would be minimal compared to the other alternatives. However, administrative barriers are effective only if the integrity of the barriers is maintained, personnel acknowledge the hazards that are present, and a long-term commitment for maintenance and funding is provided.

8.2.5 Cost

Capital costs, operation and maintenance costs, and present worth costs must be estimated in order to evaluate total project costs. Capital costs include design, construction, equipment, buildings, startup, and contingency costs. Operation and maintenance costs include labor, power, disposal of residuals, administration, and periodic review. Actual costs are expected to be no more than 50 percent over, or 30 percent under, the cost estimate.

Alternative 2 costs (\$182,600) are minimal and would also require minimal annual inspection and maintenance to ensure administrative barriers remain in place.

The costs of alternatives 3 and 4, \$2,359,500 and \$2,075,500 respectively, are significantly higher than the cost of alternative 2. However, both of these alternatives remove the immediate and long-term hazard and associated risks. These two alternatives assume that 150 unexploded ordnance will be detonated in a

controlled manner. This assumption is based on previous field searches and ordnance detonation at the INEL. Alternatives 3 and 4 also assume known acreage for each area and the volume of contaminated soil (185 yd³) to be remediated. This volume estimate is based on the cumulative area assumed to be potentially affected by the ordnance detonations. Deviation from the above assumptions would significantly affect estimated costs of the alternatives.

8.3 Modifying Criteria

The modifying criteria are used in the final evaluation of remedial alternatives. The two modifying criteria are state and community acceptance. These two criteria must consider the following factors: the elements of the alternatives which are supported; the elements of the alternatives which are not supported; and the elements of the alternatives for which there is strong opposition.

8.3.1 State Acceptance

This assessment evaluates the technical and administrative issues and concerns the state may have regarding each of the alternatives.

The State of Idaho Department of Health and Welfare (IDHW) supports the selection of alternative 3, controlled detonation and on-site disposal, off-site incineration of contaminated soil. The State of Idaho has been involved in this project from the beginning, including preparation of the Proposed Plan and this decision document. Comments received from IDHW were incorporated into these documents and they have been issued with IDHW concurrence.

8.3.2 Community Acceptance

This assessment evaluates the issues and concerns the public may have with each of the proposed alternatives. The issues identified during the public comment period are more fully addressed in the attached Responsiveness Summary.

Alternative 2, placement of administrative barriers, was supported in combination with both alternatives 3 and 4.

Alternative 3, detonation and incineration, received moderate support. However, the public was concerned with the location of the incinerator and transportation of wastes off the INEL.

Alternative 4, detonation and composting, received the most support. The public especially preferred the idea of treating contaminants on-site. However, this technology is infeasible for this interim action since the composting technology is still being developed, the estimated volume of contaminated soil is low, and heavy metals may be present in the soil.

9. THE SELECTED REMEDY

Operable Unit 10-05, which also contains OU 4-01, includes the six areas which have been identified for this interim action. It is the intention of this interim action to reduce the immediate risks (see Section 6) associated with these six unexploded ordnance areas and expedite overall site cleanup. The six locations have been identified for cleanup in this interim action because they are in or near areas frequented by INEL site personnel and contain unexploded ordnance, which pose an unacceptable risk to human health.

The selected remedy (alternative 3) for the interim remedial action of OU 10-05 will cost an estimated \$2,359,500 (present worth). The remedy includes the following actions: (1) a comprehensive search of historical records pertaining to the NPG and other suspected ordnance sites at the INEL, (2) posting of signs where the public has access to ordnance areas, (3) a field search of the six identified areas for unexploded ordnance, (4) controlled detonation of the ordnance, (5) field sampling of detonation areas and other areas suspected of contamination with explosive compounds, (6) excavation of contaminated soils exceeding action levels, and (7) off-site incineration and disposal of contaminated soils. This alternative is preferred because it best achieves the goals of the evaluation criteria given the scope of the action.

The selected remedy assumes an estimate of approximately 150 unexploded ordnance and 185 cubic yards of ordnance-contaminated soils to be remediated in the interim action. The estimates are based on previous field searches and ordnance detonation work at the INEL. This interim action is limited to the six identified areas or the estimated quantity of materials to be remediated.

The selected remedy for this interim action includes a search of historical records pertaining to ordnance activities at the INEL. The search will be comprehensive and will not be limited to the six areas identified for cleanup. This record search will provide information to enable possible future actions to be planned for remediation of unexploded ordnance at the INEL. Information from the record search will be evaluated by the agencies to determine whether any additional ordnance locations, other than the six identified, present an immediate unacceptable risk to INEL site personnel or the public.

Additional ordnance areas identified through the record search which the FFA/CO Remedial Project Managers agree will pose an immediate unacceptable risk to site personnel or the public, and consist of limited additional magnitude and associated hazards, will be considered within the scope of this interim action. Ordnance areas evaluated during the record search, which are deemed to pose an immediate risk and fall outside the current scope of this interim action could, upon concurrence of the FFA/CO Project Managers, be addressed by amending the ROD, or in another manner consistent with the FFA/CO process.

Another operable unit, OU 10-03, has been identified in the FFA/CO Action Plan for the remaining ordnance areas for which insufficient information exists to plan remediation at this time. In accordance with the FFA/CO Action Plan the remaining areas will be addressed in the Fall of 1995.

The final remedies for both OU 10-03 and OU 10-05 will be addressed in the WAG 10 RI/FS scheduled to begin in 1998. In the interim, RI/FS investigations at the WAGs will be completed according to the schedule in the FFA/CO Action Plan and lead to the final comprehensive RI/FS for WAG 10. This interim action is consistent with, and will not interfere with, any planned final action.

9.1 Historical Record Search

In Phase I, a comprehensive search of historical records pertaining to the former NPG and other suspected ordnance sites at the INEL will be completed. This search will include U. S. Navy, U. S. Army, DOE and other record repositories as necessary to sufficiently identify activities performed at the former NPG and other ordnance sites at the INEL. Specifically, the purpose of the record search is to identify the types of ordnance used, strategies and goals of the tests conducted, targets used, and other information that will aid in the planning of this and future cleanup activities pertaining to ordnance at the INEL.

9.2 Ordnance Search and Detonation

Signs would be posted at the borders of the suspected ordnance areas which are transected by public roads (see Figure 1) to warn the public of the possible presence of unexploded ordnance and the associated risks.

Phase II would continue with a systematic search for unexploded ordnance in the six identified ordnance areas in OU 10-05. These searches will employ both visual and geophysical sweeps of the areas in an effort to identify all ordnance within two feet of the surface. All ordnance identified in this manner will be marked, the location identified by coordinates, and logged into a field notebook to enable workers to relocate them. Areas suspected of soil contamination, due to discoloration or presence of chunks of explosives, will also be identified and marked for sampling in Phase III.

Phase II will continue with the controlled detonation of the unexploded ordnance and chunks of explosives located by the searches. Each ordnance would be detonated to initiate an explosion that would either destroy the ordnance and its associated explosive or expose the inside of the ordnance to determine its contents. Live ordnance would then be further detonated to destroy the ordnance compounds within. Metal debris produced would first be checked for complete detonation and then discarded as nonhazardous waste to the INEL RCRA Subtitle D landfill at CFA or, if possible, recycled as scrap metal.

9.3 Soil Sampling and Excavation

In Phase III, soil in detonation areas and other areas suspected of being contaminated with ordnance compounds will be systematically sampled using field analytical methods. Soil samples will be collected to determine if action levels have been exceeded due to the release of contaminants during ordnance detonations.

The field analytical methods developed specifically for ordnance compounds by the U. S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory will be used for this interim action. These methods will analyze for both TNT and RDX, providing low detection levels, good reproducibility, and reliability. Detection levels are sufficiently low to detect these compounds at concentrations below the cleanup action levels. Other ordnance compounds and mixtures, such as Compound B, amitol, etc., contain TNT and/or RDX and will therefore be detected using these methods.

Ten percent of the soil samples collected will be sent to an off-site analytical laboratory for quality assurance and verification of field analytical results. These samples will be analyzed using EPA method 8330 for a suite of ordnance compounds, including: RDX, TNT, DNT, and numerous related compounds.

These samples will serve as a quality check of the field analytical methods that will be used.

The screening action levels and cleanup standards for TNT and RDX have been selected based on results of the risk analysis discussed in Section 6.2 and information derived from cleanup actions at other ordnance sites. The action levels are 440 ppm for TNT and 180 ppm for RDX. These action levels were selected based on the NCP excess cancer risk of 1 in 10,000 (10^{-4}) for an occupational exposure scenario. The occupational scenario resulted in the lowest risk-based concentrations for the exposure pathways evaluated. The risk-based soil concentrations generated by the risk analysis closely parallel those used at other ordnance Superfund sites. Additionally, the risk evaluation used to derive these risk-based soil concentrations is a reasonably conservative methodology and has established action levels that are protective of human health and the environment.

Soils with TNT and RDX concentrations determined to be over the screening action levels will be excavated and containerized for transportation to an off-site incinerator. Other ordnance contaminants potentially present in the contaminated soils would also be remediated as a result of their co-occurrence with TNT and RDX. For example, DNT is a manufacturing byproduct of TNT processing, making up approximately one percent by weight of the total TNT concentration. It therefore occurs with TNT as a contaminant and will be remediated simultaneously with soils that exceed the TNT cleanup action level. This will also be true for TNT degradation products and compounds similarly associated with RDX. Field analytical methods are not available that would quantify these other potential contaminants.

The cleanup standard selected for this interim action is based on the NCP excess cancer risk of 1 in 100,000 (10^{-5}) for an occupational exposure scenario. The cleanup standards for TNT and RDX are 44 and 18 ppm, respectively. These risk-based soil concentrations were also derived in the risk analysis performed following the conservative Track 1 methodology. The cleanup standard represents the maximum concentration of soil contaminants allowed following completion of the interim action. The screening action levels and cleanup standards for this interim action are similar to those selected at other Superfund sites contaminated with ordnance compounds.

9.4 Off-site Incineration

Excavated soil will be containerized for transport off-site to an EPA approved incinerator, consistent with the EPA off-site disposal policy. The containerized soil will first be sampled and analyzed for TCLP analytes to determine whether it should be classified as RCRA waste. Excavated contaminated soils are expected to exhibit contaminant concentrations that would be less than the 12 percent by weight cutoff that would make them a reactive waste under RCRA. Transport of contaminated soil to the selected incinerator will follow all applicable laws regarding transportation of hazardous materials. The sampling results for the containerized waste will determine which transportation laws are applicable and help determine the final disposition of incinerator ash.

The interim action will conclude with off-site incineration of the contaminated soils and appropriate disposal of the ash by the incineration facility. The selected incinerator will be a facility approved by the EPA for off-site disposal of CERCLA wastes. The actual location of the incinerator will be selected during the remedial design phase of the interim action.

10. STATUTORY DETERMINATION

The responsibility of DOE and EPA, under CERCLA is to ensure that interim remedial actions will protect human health and the environment. Additionally, Section 121 of CERCLA, as amended by SARA, establishes several other statutory requirements and preferences. These specify that, when complete, the selected remedy must comply with applicable or relevant and appropriate environmental standards established under federal and state environmental laws unless a statutory waiver is justified.

The selected remedy must also be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The remedy should represent the best balance of tradeoffs among alternatives with respect to pertinent criteria. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as their principal element.

The selected interim remedial action for OU 10-05 at the INEL meets these statutory requirements. The selected remedy will reduce the immediate explosive risks in the six identified areas and reduce the risk of exposure to contaminated soil to within the NCP target risk range of 1 in 10,000 (10^{-4}) to 1 in 1,000,000 (10^{-6}). Implementation of the selected remedy will not pose an unacceptable short-term risk to human health or the environment or cause cross-media impacts.

10.1 Protection of Human Health and the Environment

The selected interim remedial action will protect human health and the environment through removal of the risks associated with unexploded ordnance. In addition, soils contaminated with ordnance compounds which pose an unacceptable risk will be removed and treated by incineration.

10.2 Compliance with ARARs

The selected remedy will comply with all Federal and State ARARs. The ARARs are presented below.

10.2.1 Action-specific ARARs

The substantive requirements of a State of Idaho Air Quality Permit will be met for this action. (IDAPA 16.01.01012)

10.2.2 Chemical-specific ARARs

There are no chemical-specific ARARs for this action.

10.2.3 Location-specific ARARs

There are no location-specific ARARs for this action.

10.3 Cost-Effectiveness

The selected remedy (alternative 3) is cost-effective because it has been determined to provide overall effectiveness proportional to its costs, the net present worth value being \$2,359,500. Although the cost of the selected remedy is higher than the other alternatives, controlled detonation and disposal on-site followed by off-site incineration of contaminated soil provides a long-term solution that is protective of human health and the environment. This alternative eliminates the risks posed by unexploded ordnance and soils contaminated with explosives compounds from locations in OU 10-05. The cost of alternative 4 is about the same as alternative 3, the effectiveness of alternative 4 is uncertain because the composting technology would be infeasible if heavy metals are present. Alternative 2, placement of administrative barriers, does not provide any treatment or removal of the hazards present and is not effective for the costs incurred.

10.4 Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

The DOE, EPA, and the State of Idaho have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be used in a cost-effective manner for OU 10-05. The agencies prefer a permanent solution whenever possible and for this action it is possible to meet the objectives of an interim action and provide a potentially permanent solution. The selected remedy, detonation and incineration, will reduce the hazards associated with unexploded ordnance and significantly reduce the volume of soil contaminants present at OU 10-05.

10.5 Preference for Treatment as Principal Element

The statutory preference for treatment that permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances as a principal element is met by this action through incineration. Unexploded ordnance will be located and detonated for disposal thereby eliminating the explosive risks associated with the six areas identified in OU 10-05. Soils contaminated with ordnance compounds will be treated by incineration. This action provides a permanent reduction in toxicity, mobility, and volume of the contaminated soils at OU 10-05.

11. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU 10-05, ordnance interim action, was released for public comment in January 1992. The Proposed Plan identified Alternative 3, detonation of unexploded ordnance and disposal on-site and off-site incineration of contaminated soil, as the preferred alternative. DOE, EPA, and the State of Idaho have reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary.

Appendix A

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

1. OVERVIEW

Operable Unit (OU) 10-05, ordnance locations interim action, is the first OU to be addressed within Waste Area Group (WAG) 10 at the Idaho National Engineering Laboratory (INEL). A Proposed Plan for the interim action was released January 5, 1992 with the initial public comment period scheduled from January 13 to February 12, 1992. A request for extension of the public comment period was received and granted, resulting in extension until March 13, 1992. The Proposed Plan recommended alternative 3, detonation of unexploded ordnance and disposal on-site and off-site incineration of contaminated soil, as the preferred alternative.

2. BACKGROUND ON COMMUNITY INVOLVEMENT

The Notice of Availability for the Proposed Plan was published January 4 and 5, 1992 in the *Moscow-Pullman Daily News*, January 5, 1992 in *The Post Register* (Idaho Falls), *The Idaho State Journal* (Pocatello), *Twin Falls Times News*, *Idaho Statesman* (Boise), *The Lewiston Morning Tribune*, *South Idaho Press* (Burley), and January 6, 1992 in the *Idaho Press Tribune* (Nampa). A similar newspaper advertisement was published January 30, 1992 in *The Post Register* (Idaho Falls), *The Idaho State Journal* (Pocatello), *Twin Falls Times News*, *Idaho Statesman* (Boise), *Idaho Press Tribune* (Nampa), and the *South Idaho Press* (Burley) repeating the public meeting locations and times. Personal phone calls were made to inform key individuals and groups about the comment opportunity.

The Proposed Plan was mailed to the public on January 8, 1992. The Plan was mailed to 5,731 individuals on the INEL mailing list with a cover letter from the Director of the Environmental Restoration Division of the Department of Energy (DOE) Field Office, Idaho urging citizens to comment on the Plan and to attend the public meetings. Copies of the Plan and the Administrative Record were made available to the public at six regional INEL information repositories: the INEL Technical Library in Idaho Falls, and the public libraries in Idaho Falls, Pocatello, Twin Falls, Boise, and Moscow. Copies of the Administrative Record file were initially sent to the information repositories on January 7, 1992. Additions to the Administrative Record file were made on January 22 and 28, and February 28, 1992.

The public comment period was initially scheduled from January 13, 1992 to February 12, 1992. Three public meetings were held on February 4, 5 and 6, 1992 in Idaho Falls, Boise, and Burley, Idaho respectively. Representatives from the DOE, EPA, State of Idaho, and EG&G Idaho, Inc. were present at the public meetings to discuss the Proposed Plan, answer questions, and receive both written and oral public comments. A court reporter was also present at each meeting to record verbatim the proceedings of the meetings. Copies of the meeting transcripts will be placed in each of the information repositories as part of the Administrative Record for public review.

A request for extension of the public comment period was made and granted, resulting in the comment period ending on March 13, 1992. A notice of the extension was published February 17 or 18, 1992 in *The Post Register*, *The Idaho State Journal*, *Twin Falls Times News*, *Idaho Statesman*, *The Lewiston Morning Tribune*, *Idaho Press Tribune*, *South Idaho Press*, and *Moscow-Pullman Daily News*.

A request was received for a public meeting or technical briefing to be held in northern Idaho. In response to this request, a technical briefing was arranged through the Moscow League of Women Voters and conducted by telephone conference call on March 9, 1992.

3. SUMMARY OF COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD

The public comment period was held from January 13, 1992 to March 13, 1992. Comments and questions raised on the Proposed Plan for interim action of unexploded ordnance locations during the comment period are summarized below. Both oral comments received at the public meetings and written comments received have been grouped together according to the general subject of the comments. These like comments have been responded to below.

Comments and questions on a variety of subjects not specific to the ordnance interim action were also received. These subjects included nuclear and hazardous waste issues at the INEL, future military use of the INEL, and the INEL Community Relations Plan. Responses to such comments are not provided in this Responsiveness Summary. Additional information on these unrelated subjects can be obtained from the INEL Public Affairs Office in Idaho Falls or at the local INEL offices in Pocatello, Twin Falls, and Boise. Comments concerning the Community Relations Plan are being considered along with other comments received during a separate public comment period on the INEL Community Relations Plan.

4. SUMMARIZED COMMENTS ON UNEXPLODED ORDNANCE INTERIM ACTION

In response to public comments received, DOE has chosen to use a comment tracking system to aid the public in finding responses to individual comments. This system allows commentors to compare public comments received by DOE with the comment summaries and responses provided in the Responsiveness Summary. This system is described below.

At the end of each comment summary is a list of codes in parentheses. These codes are assigned to individual comments and are related to the source of the comments. The first two characters of each code identifies from which transcript (T) or written document (W) a comment originated. For example, T1 is transcript number one from the Idaho Falls public meeting and W1 is the first written comment received by DOE during the public comment period. The second set of two digit numbers represents the sequence of individual comments within a given document. For example, T1-01 is the first comment identified in the Idaho Falls public meeting transcript.

A record of the comments received is annotated, listing the comment identification codes and the response numbers where each comment is summarized and the response provided in the Responsiveness Summary. Commentors can then refer to their written or oral comments and easily locate the corresponding comment summary and response. This annotated record is provided in the Appendix following the comments and responses.

4.1 Characterization and Extent of Interim Action

(1) **Comment:** Analysis of compounds could be bid by various laboratories resulting in great savings. (W2-03)

Response: A subcontract for this interim action will be awarded based on technical expertise and other specified criteria, including cost considerations. For example, the analytical laboratory used will have to be certified by the U. S. Army Corps of Engineers for the methods used to detect ordnance compounds.

(2) **Comment:** The interim action should include investigation of the "suspected bombing areas" as well. There also needs to be more investigation of the full extent of ordnance contamination at the entire site and the associated cost. This should go beyond the high-risk areas identified for the interim action without slowing down the immediate cleanup. (T1-01, T1-07, T2-04)

Response: The interim action is limited to the six areas identified in the Proposed Plan and the Record of Decision because the hazards in these areas are well known and they pose an unacceptable risk to INEL personnel working in or near these areas. As a part of this interim action an intensive search of historical U. S. Navy and other applicable Department of Defense records will be completed to learn more not only about the six identified areas, but the extent of ordnance contamination at the entire site as well. This information will be used to plan possible future actions related to ordnance at the INEL. Operable Unit 10-03 has been identified in the Federal Facility Agreement and Consent Order as a Track 2 investigation of the other ordnance areas at the INEL. The record search completed as part of this interim action will provide an early start and support that investigation.

4.2 Risk Assessment

(3) **Comment:** The Proposed Plan is premature because the extent of the problem and the associated risks are not sufficiently determined. Does a hazard exist? Where? To what extent? The answers to these questions should be determined with certainty before money is allocated to address the problem. If the problem is so bad why has DOE allowed it to persist with no action for 40 years? (W7-01, W7-03)

Response: The risk is sufficient to justify remedial action for the six areas identified in the Proposed Plan. The primary risk driving this interim action is the uncontrolled explosive hazard in areas frequented by INEL workers. High explosives degrade with time, making them unstable and therefore a hazard to personnel who may come in contact with them. Other ordnance areas are scheduled for investigation in the Fall of 1995 as part of Operable Unit 10-03. The extent and nature of contamination in these areas are less well known. The historical record search being completed as a part of this interim action will help supply some of this information and guide possible future actions related to ordnance contamination at the INEL.

The ordnance problem has not been totally ignored for 40 years. Some of the more concentrated areas were addressed as development in these areas was initiated. The results of work in such areas has

provided much of the knowledge we now have regarding ordnance at the INEL. The Federal Facility Agreement and Consent Order now gives us the mechanism to further address ordnance problems at the INEL as a whole.

(4) Comment: The qualitative risk assessment driving ordnance removal appears to be more appropriate than previous INEL risk assessments because the ordnance present a potential peril to anyone at the site. (W19-01)

Response: Qualitative risk assessments are all that are necessary for interim actions. If sufficient data are available quantitative risk assessments are performed.

4.3 Agency Roles and Regulations

(5) Comment: The Army, Navy, Air Force, and other military institutions within Idaho that have expertise in the field of unexploded ordnance should be contacted and coordinated. (T2-03, W7-02)

Response: The interim action will use contractors with experience in handling unexploded ordnance and the other necessary tasks involved. The military often uses these same contractors for remediation activities at their sites. Department of Defense personnel have been contacted for their advice while working on the Proposed Plan, and we will continue to interface with them as needed.

(6) Comment: The Navy should provide funds and personnel to address the problem. They should also be doing the records search. Why has it taken so long to get around to cleaning ordnance up? The Navy should have taken care of this problem in the 1950s. The response to this problem should have been in months not decades. Why wasn't there funding set aside for this? (W2-02, W12-01, W13-01, W16-03)

Response: DOE has been designated the responsible party for cleanups at the INEL as a Superfund site. Federal facility cleanups are generally coordinated and paid for by the agency having ownership of the facility. Federal money and therefore public tax dollars finance cleanups regardless of the agency tasked with the cleanup responsibility. There was no requirement for the U. S. Navy or any other military branch to set aside money for eventual cleanup of facilities used in the past.

Although unexploded ordnance have been present at the INEL for some time, they currently present an immediate unacceptable risk. The mechanism through which this problem is being addressed, the FFA/CO, was just signed in December of last year.

4.4 Public Involvement

(7) Comment: The public comment period should be extended to allow the public to better formulate comments. (W8-02, W14-02)

Response: The request for a 30-day extension of the public comment period was granted, resulting in the comment period running from January 13, 1992 to March 13, 1992.

(8) Comment: A public meeting or technical briefing should be held in northern Idaho prior to the close of the public comment period. (T2-10, T2-12, W8-01, W8-03, W14-01, W18-01)

Response: A technical briefing was arranged through the Moscow League of Women Voters and held the evening of March 9, 1992.

(9) Comment: Numerous comments were received concerning the INEL Community Relations Plan and public involvement. Comments included: location and format of public meetings; document format, availability, and legibility; excessive cost and time required for the public involvement process; regulatory agency support of public involvement; and format of the responsiveness summaries. (T2-09, T2-11, T3-02, T3-03, W6-01, W19-03, W21-01, W22-01, W22-04)

Response: CERCLA responsiveness summaries normally address comments pertaining to the scope of the proposed action. Topics such as the Community Relations Plan are not normally addressed in a responsiveness summary. These comments have been directed to the INEL Community Relations Plan Coordinator for consideration along with other comments received from the public during the comment period on the Community Relations Plan.

In response to public concerns, a tracking system has been adopted for use in this Responsiveness Summary to aid the public in finding responses to individual comments. This system allows commentors to compare public comments received by DOE with the comment summaries and responses provided in the Responsiveness Summary.

4.5 General Comments on Alternatives

(10) Comment: How will fugitive dust emissions be controlled to prevent airborne contamination and ensure worker safety? (W17-04)

Response: The procedures employed to control fugitive dust emissions and to insure worker safety will be developed in the remedial design phase of this interim action. A State of Idaho air quality permit is not required for CERCLA actions. However, CERCLA requires that the interim remedial action comply with the substantive requirements of an air quality permit. The appropriate information will be provided to the Idaho Division of Environmental Quality for review prior to any action.

(11) Comment: Unexploded ordnance near the surface, particularly mines, should be located and detonated. (T1-03)

Response: It is the intent of this interim action to locate and detonate near surface unexploded ordnance in the six areas identified in the Proposed Plan and the Record of Decision. This will include mines, artillery shells, and other ordnance. Operable Unit 10-03, identified in the Federal Facility Agreement and Consent Order, will investigate other areas at the INEL impacted by ordnance.

(12) Comment: Visibly contaminated soil should be addressed by incineration or composting, whichever is cheapest. (T1-04)

Response: Cost is only one of the nine criteria required by CERCLA and the National Contingency Plan to be evaluated prior to choosing a remedy. The Proposed Plan identified two alternatives using these technologies and indicated that the estimated costs as related to this action would be very similar. Incineration was identified as the preferred alternative because it has been shown to successfully treat explosives, is readily implementable, and provides long-term effectiveness and permanence.

(13) Comment: The agencies should indicate the criteria or parameters for cleanup standards (how clean is clean). DOE, EPA, and the State of Idaho should use judgement in determining the cost effectiveness of reducing the level of risk posed by soil contamination so as not to exceed the point of diminishing returns of reduced risk versus cost. (T1-05, T2-13)

Response: CERCLA and the National Contingency Plan require remedial actions to evaluate and compare carcinogenic risks to the target risk range of 1 in 10,000 (10^{-4}) to 1 in 1,000,000 (10^{-6}) excess incidence of cancer and noncarcinogenic risks to a hazard quotient of one. These values were used to determine appropriate cleanup levels for the contaminants of concern in this interim action. These levels are documented in the Record of Decision.

(14) Comment: It is good to see that work is proceeding on the cleanup of ordnance to address the dangers to site workers, the public, and the environment. (T2-01, W20-01)

Response: Comment noted.

4.6 Alternative #1

No comments received.

4.7 Alternative #2

(15) Comment: I support this alternative because the problem only affects site workers. The other alternatives are costly and would expose the general public to hazards. (W16-01)

Response: This alternative, placement of administrative barriers, does not meet the intent of CERCLA or adequately address or eliminate risks to site personnel. CERCLA and the National Contingency Plan favor alternatives that are protective of human health and the environment and reduce toxicity, mobility or volume of contaminants through treatment. Alternative 2 does not achieve these goals.

4.8 Alternative #3

(16) Comment: I support the preferred alternative (W1-01, W10-01)

Response: Comments noted.

(17) Comment: More information needs to be provided on off-site incineration including transportation issues, more accurate descriptions of the volume and character of the soils estimated to be incinerated, the disposition of the material remaining after incineration, the incinerator location, the process for choosing and approving the incineration site, and the cost and risk of incineration. (W17-02, W16-02, T2-02, T2-07)

Response: The volume and character of contaminated soils, and incineration costs were estimated in the Proposed Plan using the best available information. Better estimates cannot be made until soils are sampled and characterized during the remedial action itself. The incinerator chosen will have to be an EPA-approved incinerator capable of receiving CERCLA hazardous waste. The incinerator will be chosen during the remedial design phase for this interim action. Residual materials resulting from incineration will be disposed in compliance with environmental regulations and will be the responsibility of the incinerator facility.

(18) Comment: If this alternative is selected, it should not preclude the use of alternative 4 (composting) in the event that this technology becomes viable. Given public concern about incineration, the interim action should include further investigation of composting. (T1-02, T2-05)

Response: The anticipated low volumes and uncertain character of contaminated soil for this interim action has precluded the use of alternative 4, composting, at this time. This technology will be re-evaluated for possible future actions at the other ordnance areas associated with Operable Unit 10-03.

(19) Comment: Alternative 3 will produce mixed waste that will require special handling and storage as well as increasing the risk to the environment and employees. (W18-03, W21-03)

Response: Alternative 3, detonation of unexploded ordnance and incineration of contaminated soils, will not produce mixed waste. No radiological contamination is known or expected in the six areas identified for this interim action.

(20) Comment: The preferred alternative is not supported because incineration is utilized. Incineration is not acceptable as it may cause environmental contamination elsewhere. The public is asked to support a preferred alternative that degenerates into verbal assurances halfway through. (W19-02, W22-02)

Response: Under the preferred alternative (#3), off-site incineration would occur at an EPA-approved

incinerator. The interim action will be performed in accordance with environmental regulations.

4.9 Alternative #4

(21) Comment: Alternative 4 is the best way to take care of unexploded ordnance. There could be great savings over DOE's cost projections. DOE should make an effort to make composting more implementable. (W2-01, W17-01, W22-03)

Response: This alternative is not viable due to the unknown character and anticipated low volume of contaminated soil. It will therefore not be developed by DOE at this time. This technology is being developed at other Superfund sites and may become available for use at the INEL for possible future actions. For this interim action, the estimated cost of composting is approximately the same as that for incineration. In the future, the Track 2 investigation of Operable Unit 10-03 may show a greater volume of contaminated soil due to the larger area covered, thus making composting more cost effective.

(22) Comment: The discussion of alternative #4 in the proposed plan references "an innovative technology currently being evaluated" at another site but does not discuss the specifics of this technology. There should be a more detailed discussion of this technology and what it specifically involves. (T2-08)

Response: The level of detail provided in the Proposed Plan about the alternatives, and more specifically alternative 4 (composting), was appropriate for proposed plans as described in guidance documents for preparing CERCLA decision documents. At this time, there is little published information regarding the application of composting technology to remediation of soils contaminated with explosives. This ongoing work is sponsored by U. S. Army Toxic and Hazardous Materials Agency (USATHAMA) and they can be contacted for any updates.

(23) Comment: Composting is just setting the problem aside, not solving it. (W10-02)

Response: If the nature and volume of contaminants present in the soil were better understood, composting could prove to be an effective remedy. Composting, where appropriate, has been shown to successfully degrade many ordnance compounds within a reasonable time. This technology is currently being evaluated at some Department of Defense sites and may be re-evaluated for possible future actions at other ordnance sites at the INEL.

4.10 Other Alternatives

(24) Comment: A combination of alternative 2 and alternative 4 is supported. Administrative controls provided by alternative 2 should be immediately implemented to protect the site workers. This action should be followed by implementation of alternative 4 to produce an end product that is benign to the environment and employees. (W18-02, W21-02)

Response: An interim action is an expedited response to remove the hazards associated with a site. Currently, warning signs are in place at some of the areas where ordnance exist. Employees requiring access to these areas are required to be briefed of the hazards present. Placement of further warning signs is not deemed to be necessary considering the controls in place and the expedited cleanup schedule.

Since the nature and volume of contaminants present in the soil are not fully characterized, alternative 4 (composting) is not considered to be a readily implementable remedy. Composting is currently being evaluated at some Department of Defense sites and may be re-evaluated for possible future actions at other ordnance sites at the INEL.

(25) Comment: Anaerobic biotreatment using technology being developed at the Center for Hazardous Waste Remediation Research of the University of Idaho should be considered as a fifth alternative for evaluation. (W5-01)

Response: This technology would not be selected as the preferred remedial alternative for the same reasons that aerobic biotreatment was not selected. The unknown nature and anticipated low volume of the contaminated soils precludes the use of biotreatment technologies at this time. Additionally, there is no indication that anaerobic biotreatment has been sufficiently developed for successful implementation.

(26) Comment: Activated sludge techniques for biotreatment should be considered. (W9-01)

Response: This technology has been successfully applied to a wide variety of organic contaminants but has not been demonstrated for remediation of ordnance compounds. Technologies evaluated for this interim action were those currently being used or evaluated by the Department of Defense for ordnance compounds.

(27) Comment: Why doesn't DOE use the vitrifying equipment at the INEL to remediate the contaminated soil from the ordnance locations? This process would destroy contaminants in the soil. (T3-01)

Response: This technology has not been demonstrated as a viable technology for remediation of ordnance compounds. Vitrification would actually increase the residual volume as compared to incineration for the contaminants associated with this interim action. Additionally, the anticipated low volume of contaminated soils would not make this a cost effective remedy.

(28) Comment: Detonation of ordnance could be done using military tanks or chain whippers. (W2-04)

Response: The use of tanks or similar devices to detonate ordnance at the INEL would not be a viable alternative. Such techniques are meant for wartime applications and would result in unacceptable

environmental impacts at the INEL.

(29) Comment: On-site destruction should be used. Equipment or facilities for remediation should be portable and designed to be used for remediating other sites as well. (W4-02)

Response: Unexploded ordnance will be destroyed on-site and in place where feasible to minimize risks associated with moving the ordnance. Contaminated soil will be incinerated off-site since the volume anticipated for this interim action precludes bringing an incinerator on-site due to the high mobilization and operational costs. A portable incinerator or other on-site destruction technology, such as composting, may be considered for possible future actions at Operable Unit 10-03 at the INEL.

(30) Comment: A portable (vehicle-mounted) electromagnet should be considered for the project. Non-magnetic materials could be detected with a metal detector and removed. After removal, metals could be recycled and the areas could be plowed to expose additional materials. (W4-03)

Response: Electromagnetic technology has not been demonstrated as a feasible means to locate unexploded ordnance. Metal detectors and related technology are common technologies which may potentially be employed for this action. Details of the technologies chosen for this action will be documented in the Remedial Action workplan.

Recycling of the scrap metal generated after removal and detonation of ordnance will be evaluated for this interim action. Plowing to expose additional ordnance may not only be dangerous, but would result in unacceptable environmental impacts at the INEL.

(31) Comment: Loads of materials could be taken to the Nevada Test Site and exploded underground with other bomb tests. (W16-04)

Response: CERCLA and the National Contingency Plan prefer not to transport materials off-site as described in the EPA off-site policy. When materials are taken off-site, the action must be consistent with this policy. One requirement is that these materials must be taken to an EPA-approved treatment/disposal facility capable of safely handling and disposing the wastes involved.

4.11 Costs, Budget, and Schedule

(32) Comment: While the cost breakdown in the proposed plan is appropriate for the general public, more detailed costs should be provided. (W4-01)

Response: Proposed Plans do not require detailed cost estimates. Proposed Plans are prepared following the evaluation and screening of various technologies and identify the preferred alternative. A more detailed cost estimate was not available at the time the Proposed Plan was developed. Greater detail will be developed after a remedial alternative is selected, as documented in the Record of Decision, and remedial design proceeds.

In support of Remedial Design/Remedial Action activities a more detailed analysis of costs in the proposed plan was developed and placed in the Administrative Record.

(33) Comment: The incineration or composting of soils that remain should not be considered a high-priority item. Funding should be used for other cleanup. (W4-04)

Response: The soil contaminants of concern which have been identified may pose an unacceptable risk to site personnel. The FFA/CO Project Managers have agreed that immediate action is appropriate to reduce the hazards posed by the contaminated soils and expedite total site cleanup. Cleanup action levels have been developed that will guide the removal of these contaminants. Only soil with contaminant concentrations exceeding the cleanup action levels will be removed and treated by incineration.

(34) Comment: The hourly rates of \$60 and \$80/hour used to estimate costs for each alternative are exorbitant. Even considering the cost of benefits and overhead these are unreasonable. (W15-01)

Response: The rates quoted in the Proposed Plan are average rates for professional services and incorporate realistic overhead charges. The estimates are consistent with rates from previous experience with contracts for similar work, and are appropriate at this point in the project prior to any design.

(35) Comment: Cleanup should begin immediately or within the next year. The risks presented by unexploded ordnance are greater than the cost of addressing the problem. (W2-05, W3-01, T1-06)

Response: The actual cleanup of unexploded ordnance will begin in the summer of 1993 following completion of the remedial design phase. This interim action accelerates the cleanup of unexploded ordnance at the INEL by starting this process now instead of waiting for completion of the Operable Unit 10-03 Track 2 investigation, scheduled for Fall 1995 in the Federal Facility Agreement and Consent Order Action Plan.

(36) Comment: The time-line for addressing the ordnance that is not addressed by this interim action should be determined. (T2-06)

Response: The ordnance areas not addressed as part of this interim action are scheduled to be investigated in the Track 2 investigation for Operable Unit 10-03 in Fall 1995. This schedule is outlined in the Federal Facility Agreement and Consent Order Action Plan for the INEL.

4.12 Other Related Concerns

(37) Comment: The Proposed Plan mentions future development at the Central Facilities Area gravel pit. What is this future development? (W17-03)

Response: There are preliminary plans for a waste transfer station to be built near this location that would handle non-hazardous solid waste generated at the INEL and destined for the landfill.

(38) Comment: Copies of viewgraphs from the presentation were requested. (W11-01)

Response: Copies were provided to the interested person.

Appendix B
PUBLIC COMMENT/RESPONSE LIST

TRANSCRIPT OF MEETINGS AND WRITTEN COMMENTS

RECEIVED ON THE ORDNANCE PROPOSED PLAN

A Guide to Locating Comments and Responses

Documents in this appendix include transcripts of public meetings held on the Proposed Plan for a Cleanup of Unexploded Ordnance Locations at the Idaho National Engineering Laboratory and all written comments received during the comment period.

A comment tracking system has been utilized to aid the public in finding responses to individual comments on the Ordnance Proposed Plan that were provided during the comment portion of the public meetings or submitted in writing. The purpose of this system is to provide the public with an opportunity to compare the initial comments received by DOE with the summarized comments and responses provided in the Record of Decision's Responsiveness Summary. This system is described below:

During the comment period held on the Ordnance Proposed Plan, the Department of Energy received approximately 100 pages of written and oral comments submitted by members of the public and public officials. From these pages, a number of common topics and questions has emerged.

To provide a manageable response to comments document for the public and the agencies, questions and comments with similar themes were condensed into a single comment or question with a response provided by the agencies. Immediately after each summarized comment, you will find a series of letters and numbers in parentheses. These are all the comments that were grouped together to create that particular summarized comment. These series of letters and numbers identify individual comments from the transcripts or written comments. The first two characters of each comment code identify which transcript, or written document the comment is found (transcript #1, Idaho Falls = "T1", written comment #1 = "W1"). The second set of numbers represents the sequence of individual comments in the document ("T1-1" is the first comment identified in the Idaho Falls transcript.)

Each comment identified within the meeting transcripts or written comments is marked by brackets and the assigned comment code to assist individuals in finding their comments and the corresponding responses. A set of indices is also provided that cross-references comments by commentor name, comment code, response number, and the page number of the comment.

This system has been initiated by the Department of Energy to respond to public comments concerning Responsiveness Summaries and is intended to aid the public in reviewing the Record of Decision and the Responsiveness Summary for this project. If you have any comments on this system and suggestions for improvement, please contact the INEL Community Relations Plan Coordinator at (208) 526-6864.

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34	209	W15-01	(b) (6)
35	49	T1-06	(b) (6)
35	149	W2-05	(b) (6)
35	150	W3-01	(b) (6)
36	96	T2-06	(b) (6)
37	212	W17-03	(b) (6)
38	205	W11-01	(b) (6)

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(b) (6)	02	T2-04	96
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(b) (6)	36	T2-06	96
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(b) (6)	09	T3-02	142
(b) (6)	09	T3-02	143
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(b) (6)	02	T1-07	49
(b) (6)	35	T1-06	49
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(b) (6)	38	W11-01	205
(b) (6)	08	W18-01	213
(b) (6)	19	W18-03	215
(b) (6)	24	W18-02	214
(b) (6)	24	W18-02	215
(b) (6)	17	T2-07	96
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(b) (6)	07	W8-02	201
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T1-03	48	11	(b) (6)
T1-04	48	12	(b) (6)
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T1-06	49	35	(b) (6)
T1-07	49	02	(b) (6)
T2-01	94	14	(b) (6)
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T2-05	96	18	(b) (6)
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T2-09	98	09	(b) (6)
T2-10	98	08	(b) (6)
T2-11	98	09	(b) (6)
T2-11	99	09	(b) (6)
T2-11	100	09	(b) (6)
T2-11	101	09	(b) (6)
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T3-01	142	27	(b) (6)
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T3-02	143	09	(b) (6)
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W2-02	149	06	(b) (6)
W2-03	149	01	(b) (6)
W2-04	149	28	(b) (6)
W2-05	149	35	(b) (6)
W3-01	150	35	(b) (6)
W4-01	151	32	(b) (6)
W4-02	151	29	(b) (6)
W4-03	151	30	(b) (6)
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W8-03	201	08	(b) (6)
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W12-01	206	06	(b) (6)
W13-01	207	06	(b) (6)
W14-01	208	08	(b) (6)
W14-02	208	07	(b) (6)
W15-01	209	34	(b) (6)
W16-01	210	15	(b) (6)
W16-02	210	17	(b) (6)
W16-03	210	06	(b) (6)
W16-04	210	31	(b) (6)
W17-01	212	21	(b) (6)
W17-02	212	17	(b) (6)
W17-03	212	37	(b) (6)
W17-04	212	10	(b) (6)
W18-01	213	08	(b) (6)
W18-02	214	24	(b) (6)
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W18-03	215	19	(b) (6)
W19-01	216	04	(b) (6)
W19-02	216	20	(b) (6)
W19-03	217	09	(b) (6)
W20-01	218	14	(b) (6)
W21-01	220	09	(b) (6)
W21-02	222	24	(b) (6)
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W22-01	224	09	(b) (6)
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07	(b) (6)	208	W14-02
08	(b) (6)	98	T2-10
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08	(b) (6)	201	W8-03
08	(b) (6)	202	W8-03
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09	(b) (6)	144	T3-02
09	(b) (6)	217	W19-03
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09	(b) (6)	101	T2-11
09	(b) (6)	198	W6-01
09	(b) (6)	220	W21-01
09	(b) (6)	144	T3-03
10	(b) (6)	212	W17-04
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12	(b) (6)	48	T1-04
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13	(b) (6)	48	T1-05
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17	(b) (6)	96	T2-07
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18	(b) (6)	96	T2-05
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19	(b) (6)	222	W21-03
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23	(b) (6)	204	W10-02
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25	(b) (6)	153	W5-01
26	(b) (6)	203	W9-01
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28	(b) (6)	149	W2-04
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31	(b) (6)	210	W16-04
32	(b) (6)	151	W4-01
33	(b) (6)	151	W4-04
34	(b) (6)	209	W15-01
35	(b) (6)	149	W2-05
35	(b) (6)	150	W3-01
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Appendix C
ADMINISTRATIVE RECORD INDEX

**IDAHO NATIONAL ENGINEERING LABORATORY
ADMINISTRATIVE RECORD FILE INDEX**

**INTERIM ACTION OF UNEXPLODED ORDNANCE LOCATIONS AT THE INEL
OPERABLE UNIT 10-5
06/29/92**

FILE NUMBER

AR1.1

BACKGROUND

- Document #: 3527
Title: Trinitrotoluene Health Advisory
Author: Gordon, L.
Recipient: N/A
Date: 01/01/89
- Document #: 3528
Title: Application of Risk Assessment Techniques to Evaluate Public Risk and Establish Priorities for Cleanup of Ordnance at Formerly Used Defense Site
Author: Douthat, C. D.
Recipient: N/A
Date: 07/18/91
- Document #: 8901
Title: Organic Explosives and Related Compounds: Environmental and Health Considerations
Author: Burrows, E. P.
Recipient: N/A
Date: 03/01/89
- Document #: 3529
Title: Health Advisory for Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)
Author: McLellan, W. L.
Recipient: N/A
Date: 11/01/88
- Document #: EGG-WM-6875, (pg. 300-308 and Appendix C)
Title: Installation Assessment Report for EG&G Idaho, Inc., Operations at the INEL
Author: N/A
Recipient: N/A
Date: 01/01/86
- Document #: ERP-WAG10-06
Title: Engineering Design File for OU 10-05 Interim Action
Author: Lusk, M. W.
Recipient: N/A
Date: 01/28/86

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06/29/92

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FILE NUMBER

AR3.7 INTERIM ACTION

- Document #: 5112
Title: WAG-10 Ordnance Interim Action Cost Estimate for Alternatives 2, 3, and 4
Author: EG&G, MK-Ferguson
Recipient: N/A
Date: 05/14/92

AR3.8 RISK ASSESSMENTS

- Document #: ERP-WAG10-08
Title: Risk Analysis for Soil Contaminants - Engineering Design File
Author: Figueroa, I.
Recipient: N/A
Date: 02/28/92

AR4.3 PROPOSED PLAN

- Document #: 3532
Title: Proposed Plan for a Cleanup of Unexploded Ordnance Locations at the INEL (The Proposed Plan is included in the Dear Citizen Pamphlet)
Author: Lusk, M. W.
Recipient: N/A
Date: 01/07/92

AR6.1 COOPERATIVE AGREEMENTS

- Document #: ERD1-070-91*
Title: Pre-signature Implementation of the CERCLA Interagency Agreement Action Plan
Author: EPA, Findley, C. E.
Recipient: DOE, Solecki, J. E.
Date: 04/19/91
- Document #: 3205*
Title: U.S. DOE INEL Federal Facility Agreement and Consent Order
Author: N/A
Recipient: N/A
Date: 07/22/91

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AR6.1 COOPERATIVE AGREEMENTS (continued)

- Document #: 2919*
Title: INEL Action Plan For Implementation of the Federal Facility Agreement and Consent Order
Author: N/A
Recipient: N/A
Date: 07/22/91
- Document #: 1088-06-29-120*
Title: U.S. DOE INEL Federal Facility Agreement and Consent Order
Author: N/A
Recipient: N/A
Date: 12/04/91
- Document #: 3298*
Title: Response to comments on the Idaho National Engineering Laboratory Federal Facility Agreement and Consent Order
Author: N/A
Recipient: N/A
Date: 02/21/92

AR10.3 PUBLIC NOTICE(s)

- Document #: 3531
Title: Citizens Are Asked to Comment - Public Comment on Test Area North Injection Well and Unexploded Ordnance
Author: INEL Community Relations
Recipient: N/A
Date: 01/05/92

AR10.4 PUBLIC MEETING TRANSCRIPTS

- Document #: 5129
Title: Public Meeting Transcripts from Idaho Falls, Boise, and Burley on the Proposed Plan for Cleanup of Unexploded Ordnance
Author: N/A
Recipient: N/A
Date: 02/04/92

* Document filed in INEL Federal Facility Agreement and Consent Order (FFA/CO) Administrative Record Binder